

REMARKS

Applicants acknowledge the indication of the allowability of the subject matter of Claims 5 and 6, as set forth in paragraph 8 of the Office Action. By the foregoing amendment, Claim 6 has been rewritten in independent form, and is now believed to be allowable. However, for the reasons set forth hereinafter, Applicants respectfully submit that Claim 5 is allowable in its present dependent form. Claim 4 has been cancelled.

Claim 1 has been rejected under 35 U.S.C. §112, first paragraph, on the ground that the specification, while being enabling for the use of multiple heaters as shown in Figure 2 of the disclosure, does not reasonably provide enablement for the use of multiple heaters provided in any type of spatial configuration on which Claim 1 reads. While the Office Action does not specifically indicate which features or limitations of Claim 1 are considered not to be enabled, it is assumed that the stated issues relate to the language which has been added to the last paragraph of the claim, as amended in the December 20, 2004. Applicants respectfully submit, nevertheless, that Claim 1 as amended is fully supported by an enabling disclosure, within the meaning of 35 U.S.C. §112, first paragraph.

As noted previously, and as acknowledged in the Office Action, the specification clearly shows and enables the use of multiple heaters as shown in Figure 2 of the drawings. As stated in the specification at page 9, lines 7-10, the

reactor system 20 "has an electric heater that comprises "several inlet-sided heating elements, 22, 23, 24 in order to feed a reaction educt stream 21 over the reaction chamber inlets 25, 26 and 27 to the reaction chamber 28". In addition, the specification further states at page 4, lines 14-18 that in one embodiment of the invention, "there is an electric heater in front of the reaction chamber inlet, for heating at least one reaction educt in a start operating phase, and there are means for point-by-point injection of at least one reaction educt heated in the heater, into the reaction chamber". Accordingly, Applicants respectfully submit that each and every limitation recited in the last paragraph of Claim 1 (as amended) finds clear and ample support in the specification. In particular, the "spatial configuration" referred to in Claim 1 is clearly shown in Figure 2, and described in the portions of the text set forth above. Accordingly, reconsideration and withdrawal of this ground of rejection are respectfully requested. Alternatively, if the Examiner continues to believe that Claim 1 is not supported by an enabling disclosure, further explanation of the particular limitations of Claim 1 which are considered to be unsupported in the specification is respectfully requested.

Claims 1-3 have been rejected under 35 U.S.C. §102(a) as anticipated by Abe (U.S. Patent No. 6,641,795), while Claim 4 has been rejected under 35 U.S.C. §103(a) as unpatentable over Abe. By the foregoing amendment, as noted previously, Claim 4 has been cancelled. However, Applicants respectfully submit that each of Claims 1 through 3 distinguishes over the Abe reference.

The present invention is directed to a reactor system for reacting a hydrocarbon or hydrocarbon containing derivative charging material, having a catalyst coated reaction chamber, to which a reaction educt stream can be fed through a reaction chamber inlet. In order to facilitate rapid heating of the reaction chamber during a start-up phase, a plurality of inlet openings, each of which has its own heating element 22-24 (Figure 2), are provided upstream of the reaction chamber, relative to the direction of educt flow. Each of the heating elements 22-24 is permeable to the educt flow, and is coated with a catalyst material. In this manner, the flow of liquid or gaseous comix stream into the reaction chamber can be provided in the form of a plurality of discrete individual streams of preheated material, thereby accommodating a rapid increase of the temperature within the reaction chamber itself.

The Abe reference, on the other hand, discloses a reformer which includes a porous heater unit 10 containing at least one catalyst component, as indicated in the specification at Column 6, lines 40-52. Ordinarily, the heater unit 10 is disposed upstream of the catalyst unit 11 in the flow direction of the reactant fluid, as indicated, for example, at Column 6, lines 30-31.

To this extent, the reformer arrangement disclosed in Abe is similar to that of the present invention. However, as noted in response to the previous Office Action, Abe contains no disclosure which teaches or suggests the point-by-point injection of reaction educt feed into the reaction chamber in the manner

recited in independent Claim 1 as amended. That is, Claim 1 recites that heating elements are disposed at a plurality of inlet openings upstream of the reaction chamber, and that the heating elements "accommodate[e] a discrete point-by-point injection of heated reaction educt into the reaction chamber".

Paragraph 5 of the Office Action equates the heater units 10a and 10b to the electric heater arrangement of Claim 1, and states that the "catalyst-coated reaction chamber" is found in the catalyst unit 11b in Figure 7 of Abe. In addition, the Office Action also indicates that the areas immediately in front of heaters 10a and 10b in Figure 7 correspond to the reaction chamber inlet. Finally, the Office Action states that since the heater elements have a honeycomb structure with multiple passages, those passages constitute means for accommodating discrete point-by-point injection of heated reaction educt material into the reaction chamber.

A careful analysis of these correlations, based on Figure 7 of Abe et al, however, shows that such a reading of Claim 1 leads to inconsistent and irreconcilable results. In particular, if the "catalyst-coated reaction chamber" of Claim 1 is found in the catalyst unit 11b, then how is the area upstream of heater 10a an inlet to "the reaction chamber"? Alternatively, if it is, then how is the area upstream of the heater unit 10b also an inlet to the same "reaction chamber"? Moreover, Claim 1 specifically recites that the individual heating elements "are disposed at respective reaction chamber inlet openings upstream

of said reaction chamber". If the areas upstream of the heater units 10a and 10b are equated to the reaction chamber inlets, then what elements constitute the "reaction chamber inlet openings" adjacent to each of which a heating element is found?

Paragraph 5 of the Office Action also suggests that the honeycomb structure of the heater units 10 in Abe (Figure 2) contain passages which constitute means for accommodating discrete point-by-point injection of heated reaction educt material into the reaction chamber. If the heater element 10, however, is interpreted in this manner, then the Abe structure does not include "a plurality of physically separated, individual heating elements which are disposed at respective reaction chamber inlet openings upstream of the reaction chamber". Moreover, Claim 1 further recites that each of the discrete heating elements "at least partially cover[s] one of said inlet openings". Construing the honeycomb heating element of Figure 2 in Abe in the manner indicated in the Office Action, the "inlet openings" in Abe are not at least partially covered by one of the discrete heating elements.


Applicants respectfully submit that Figure 7 of Abe discloses a reformer unit with a single reaction chamber defined by a metallic casing 12 (Column 6, lines 25-27), with respective heating elements 10a, 10b and catalyst elements 11a, 11b disposed therein, and that the features contained in Claim 1 of the

present application as set forth above, are neither taught nor suggested in the Abe patent.

In light of the foregoing remarks, this application should be in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #225/49232).

Respectfully submitted,



Gary R. Edwards
Registration No. 31,824

CROWELL & MORING LLP
Intellectual Property Group
P.O. Box 14300
Washington, DC 20044-4300
Telephone No.: (202) 624-2500
Facsimile No.: (202) 628-8844
GRE:kms
379870v1